# Identification of marine bacteria isolated from marine soil sediments and their ability to biosynthesise AgNPs extracellularly

## ABSTRACT

Over the past few years, nanoparticles synthesis is one of the most active research in the nanotechnology field. The synthesis can be done chemically, physically and biologically. However, some researchers prefer to synthesise it biologically or also known as biosynthesis or 'green synthesis' because it is believed to be safer, environmentally friendly and cost-effective. In this work, we report the extracellular synthesis of 20 isolated marine bacteria from marine soil sediment which were identified and evaluated to synthesise silver nanoparticles (AgNPs). This was done by the addition of silver nitrate (AgNO3) solution with the cell-free supernatant of the isolated marine bacteria at room temperature. The marine bacteria were identified using 16S rRNA identification and neighbour-joining phylogenetic tree were constructed. Identification results showed that the isolated bacteria consist of 19 Serratia sp. and 1 Providencia sp. The biosynthesised AgNPs colloids were evaluated using morphological and optical analysis. AgNPs were observed for colour change and determined using ultraviolet-visible (UV-Vis) spectrophotometer. The existence of surface plasmon resonance peak at 400 to 450 nm is evidence of AgNPs formation.

**Keyword:** Nanoparticles synthesis; Extracellular; Marine bacteria; Silver nanoparticles (AgNPs); Surface plasmon resonance